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The Recent Earthquake in Mexico City and Its Effects Upon the Manufacturing and Distributing Plants of the Mexican National Gas Company of that City.

[Prepared for the JOURNAL, by MR. CHARLES D. LAMSON.]

At 4:29, the morning of June 7, 1911, the most violent and terrifying earthquake in the memory of the oldest inhabitant visited Mexico City, leaving in its wake an enormous property damage and a frightful loss of life. Various theories as to its origin and estimates of its duration have been made; but as the seismographic instruments at the National Observatory, in Tacubaya, and the Geological Institute in the city proper, were rendered useless by the severity and peculiar nature of the shock, these are but mere conjectures and nothing absolutely official is obtainable.

This being the first quake of any consequence to visit the vicinity since the completion of the Mexican National Gas Company's plant in Mexico City, the construction of its works and distributing system were subjected to a test that fully proved the value of the peculiar features that have been followed out in the installation of its plant, machinery and connections, and the laying of the distributing mains, in so far as such features were intended to successfully withstand the actions of earthquake shocks.

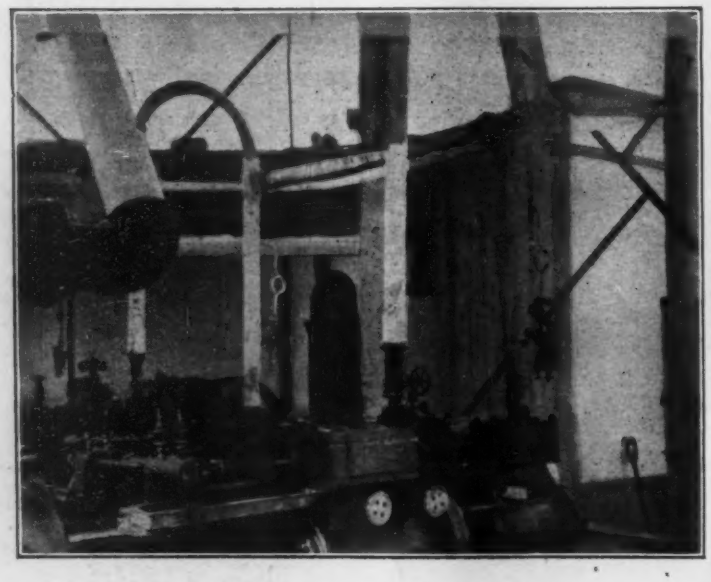
In the works' plant the only damage done was to a 60,000 gallon water tower, the underframing of which was badly twisted and the tank rendered worthless for the time being by the inlet connection snapping off short at the point where it joined to the conical shaped bottom of the tank. Even this damage might have been avoided had

Wreckage of Mexican Central Freight House. Parallel to the gable end about 0 feet therefrom, a 6-inch cast iron pipe remained intact although the rails of the local street railway railway 10 feet away were badly twisted. The north rail was deflected 10 inches out of line while the south rail was bulged upwards 3¾ inches. These are 114 pound girder rails, laid on reinforced concrete foundation and paved solidly between with asphalt paving.

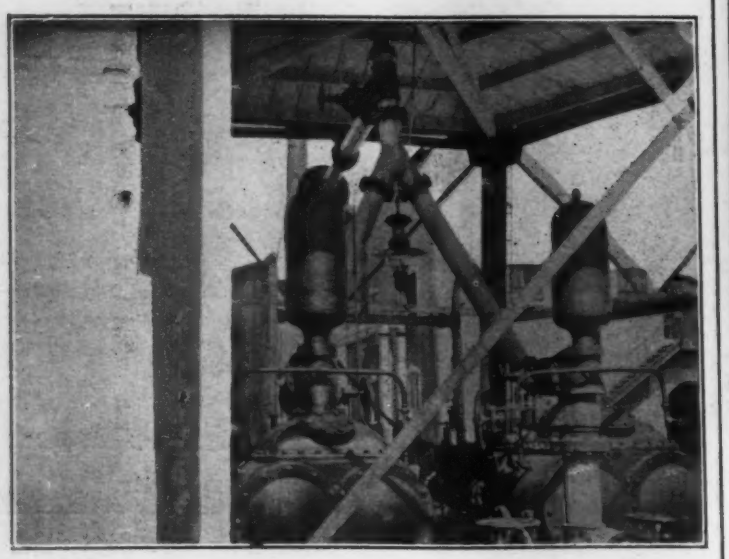
Wreckage of steel framed building (a public school). A 12-inch iron main directly under the wreckage was not affected.

not the flexibility of the superstructure been destroyed through having been solidly bricked up between the I-beam column supports, so as to

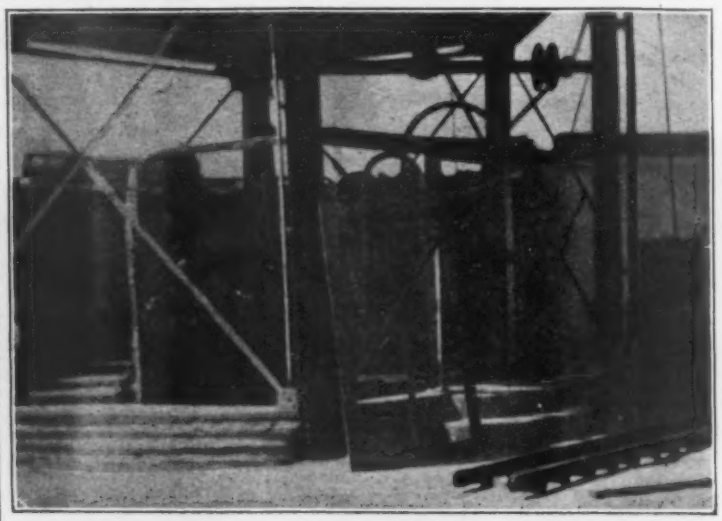
Photograph of twisted 114-pound girder rails taken from street car track on Estaciones street.



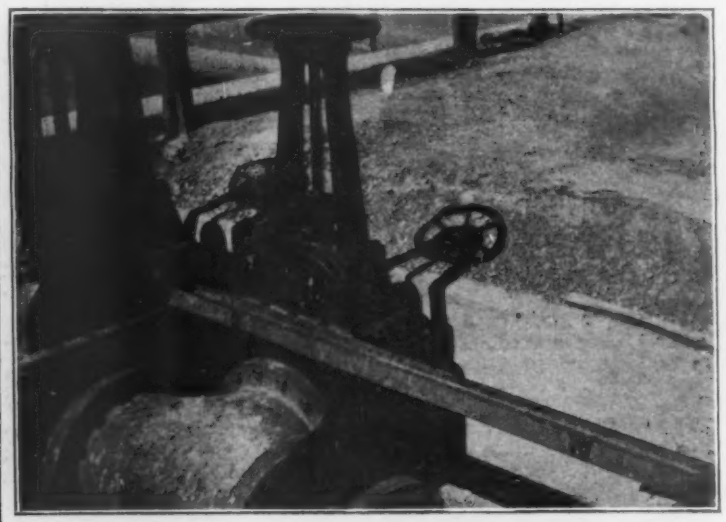
Interior view of pump house showing system followed in making pipe connections.



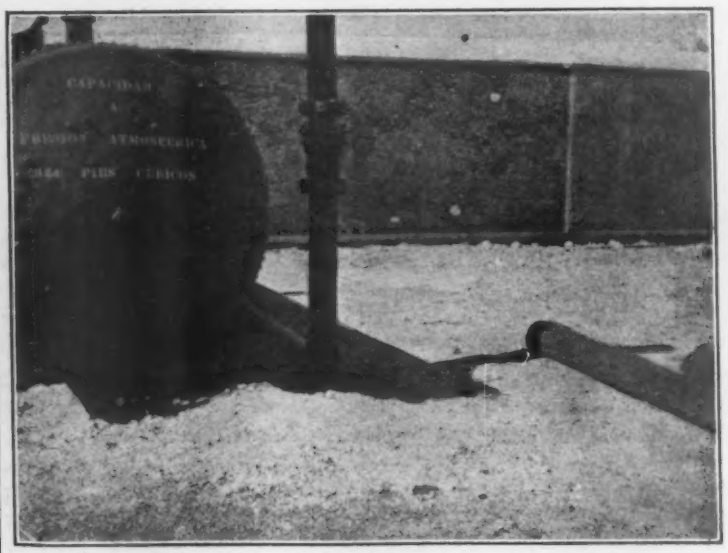
Wreckage of pump house and overhead water tank, showing snapped tie rods in the framing. The steam and water pipe connections to the pumps being protected by expansion joints and long radius pipe bends instead of fittings were not disturbed and the pumps continued to operate uninterruptedly.



Another view of water tower and pump house showing twisted frame work, snapped tie rods, etc. The pump and connections are shown intact.

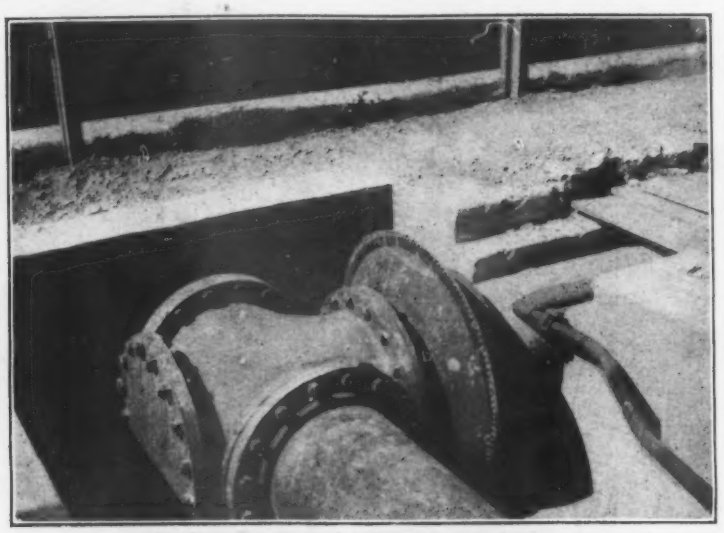


Photograph showing nest of valves protected by bellows type expansion joint and flexible hanger.

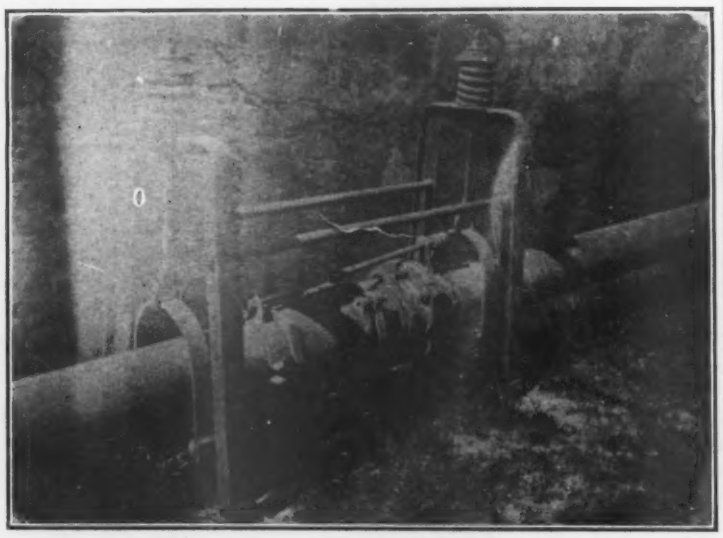


Vertical expansion joint, inlet connection to compression tank. This joint moved 2¼ inches.

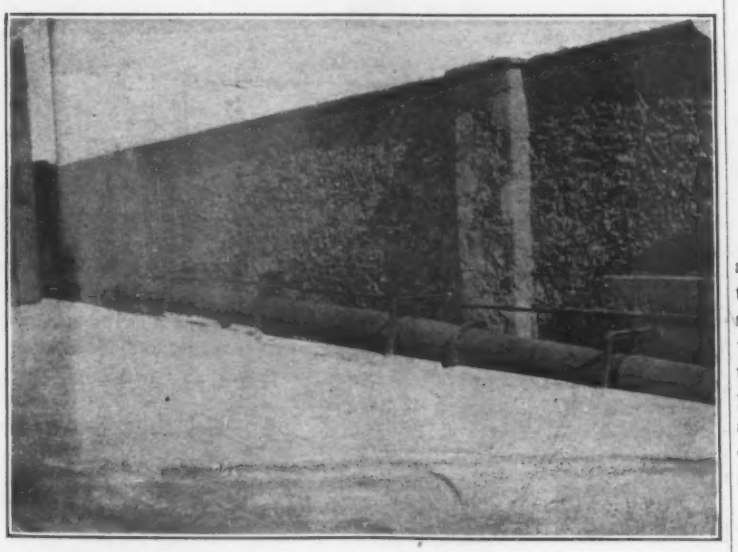
form the walls of the pump house. By reference to the photographs it will be seen that the pumps directly beneath the tank, and the steam and water connections thereto, were not disturbed in the least, this being entirely due to the use of full-sweep bends and the avoidance



Photograph showing bellows type of expansion joint used to protect riveted steel pipe lines around the works' plant.



Expansion joint and flexible supports on high pressure line just before same connects with compression tanks. This joint showed a traverse of 6¾ inches.



Photograph showing flexible hanger surports on 20-inch main pipe line at the plant.

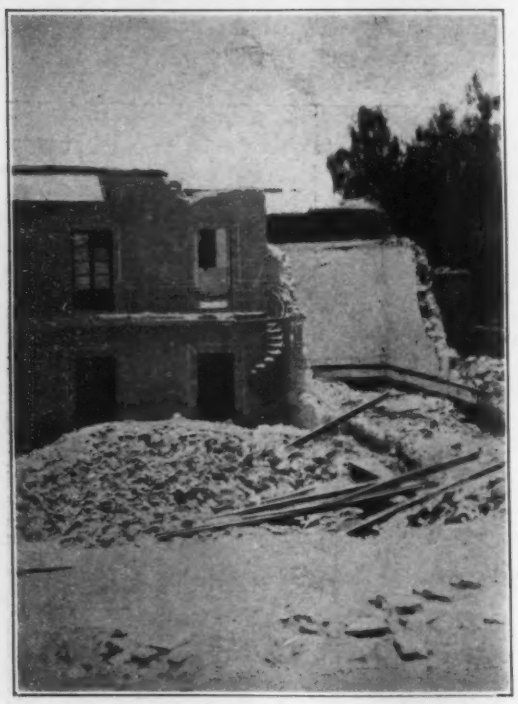
of the use of fittings followed generally throughout the plant in steam and water pipe connections.

The main gas piping around the plant is all of riveted steel plate, of 20-inch and 16-inch diameter, supported by specially constructed hanger supports and roller bearings, designed to take up automatically

This and the following cuts are views of the wreckage of Cuartel San Cosme (3d Artillery Barracks). Ninety-two persons were buried under the debris, 52 of whom were killed; the emaining 40 are all seriously injured. On the opposite side of the street a 6-inch wrought iron high pressure main runs under the sidewalk. This main was uninjured.

all horizontal, lateral and perpendicular strains to which the piping through its own gravity and the action of the spiral springs. Each set of apparatus, where connected into the main lines, is provided with an expansion joint which allows the piping and apparatus to take up any motion independently of each other. Two types of expansion joints are used, the one the usual standard iron body, brass sleeve, on the vertical line of pipe, the other a wrought iron bellows or diaphragm-shaped one, of our own design and make, on the horizontal lines.

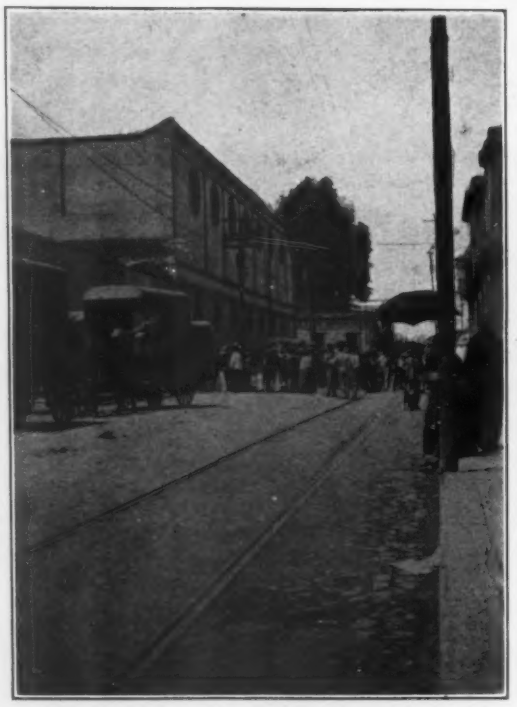
Observations taken at the plant immediately after the earthquake showed the traverse made by the brass sleeves in the standard expansion joints to have varied from 2½ to 4 inches. The contraction and expansion on the other type of joint could not be determined, as, owing to its construction, it resumed its original position without leaving anything to indicate the range of variation. A better idea of the construction and application of both types of joints can be had from the photographs. As the main buildings around the plant are constructed of steel, with corrugated siding and roofing, no harm was done to these structures.



The lampblack separator, the filter and the underground water storage reservoir, being all of reinforced concrete, likewise were undamaged, although the strains to which they were subjected must have been terrific. The level of the water in the reservoir was 5 feet below the top; in the filter, 4 feet, and 6 inches below the overflow. From both the water was thrown out and over the walls, flooding the surrounding yard.

Despite the shaking up, at no time was the gas supply shut off from the city, although for a period the pressure was reduced until the storage holder drips could be cleared to allow the "booster" to get a full supply. These drips became partially sealed through the violent oscillatory motion of the water in the holder tank, which caused a slopping over of the water into the inlet and outlet standpipes and thence into the drip pots. The normal level of the water level in the holder tank was reduced 5 inches. As the springs behind the guide rollers allowed plenty of play for the holder in the guide framing, the cups of the outer and middle lifts did not unseal.

The distributing system is a combination one of high and low pressure, the high pressure side being of strictly standard, wrought iron pipe, which supplies the various sections of the city through double district governors, so placed that a uniform pressure of 36-tenths on the low pressure side is maintained. The low pressure mains are of cast iron, class "B" pipe, bell-and-spigot joints, in lengths to lay 12 feet.



At the time of the earthquake there were in service 49 miles of mains and 73 miles of service pipe, 42 miles of the latter being through services from main to meter; the remaining 31 miles extending from the main to the curb only. The main system covers pretty well the entire district affected by the earthquake, the one "colonia" or district most severely shaken being completely gridironed with low pressure mains, besides having the greater part of the high pressure line and 3 of the district governors within its boundaries. The system followed in laying this pipe was pretty much the same as that followed out in the United States, the essential difference being mainly in the manner of yarning and lea ding the joints.

Owing to the almost level surface of the city streets, and the further fact that the telephone and electric lighting systems are supplied through underground conduits, a great many drips become necessary in avoiding obstructions and in giving proper drainage to the pipe lines. To avoid the dead weight, incident to the use of the ordinary standard drip or syphon, and to maintain the flexibility horizontally in the line, we use a horizontal drip consisting of a piece of pipe from 36 inches to 48 inches long, this pipe being from 2 to 2½ diameters larger than the pipe to be drained. Thus a 4-inch main will drain into a drip made up of 10-inch pipe introduced into the run and connected thereto by a 4-inch by 10-inch double bell, the smaller diameter bell being cast eccentric to the larger. The joints are run the same as the other joints in the line.

In running our high pressure lines, expansion joints are used throughout, the same being introduced so as to average 8 per mile. These are set in masonry vaults to facilitate regular inspections and to afford facility for quick repairs should such become necessary. All turns in these lines are made with long, sweep bends made of the pipe itself. Offsets are made in like manner. An examination of these joints made immediately after the earthquake developed the fact that they had pulled from 3 inches to 4½ inches. Subsequent examinations have shown the joints to have resumed their original positions.

Services are connected to the mains by means of a service T and street elbow, the fittings being so set as to form a swing joint. In entering the building play is allowed for the pipe to swing where it passes through the building or foundation walls.

The largest number of leaks after the earthquake developed in the services at the junction with the main. Here it was found that the street elbows had sheared off at the male thread, due to the fact that the ells had been too solidly set up when originally installed. Several minor breaks were found in the reducing castings on the mains, but these generally were on dead-end lines, where the flexibility of the system had not been maintained owing to the absence of connecting lines.

With this recent experience coupled with the writer's experience and observations in earthquake countries in both hemispheres, during a period extending over 5 years, the following deductions may be depended upon as reliable when applied to gas plant construction in localities subject to seismic disturbances:

1. That cast iron pipe, class "B" or heavier, with bell-and-spigot joints, securely blocked up, yarned thoroughly and with the lead properly cast into the joints, running same from 15 per cent. to 20 per cent. heavier in weight than in the usual practice, will withstand severe shocks, lateral or perpendicular, without fracture or permanent distension, especially when the piping system is tied in on all intersections.

2. That, in reducing the size for branch lines, it is preferable to use branch fittings of the same diameter on all outlets, effecting the required reduction at a point at least a pipe length away from the branch fitting.

3. That is using, wrought iron or steel screw pipe for mains, if proper expansion joints are used, so that they will average in number, 8 per mile, there will be no stripping of threads or buckling or rupture of pipe.

4. That the use of cast iron fittings in wrought iron pipe lines will result in the destruction of such fittings in the event of a sudden strain.

5. That bends or off-sets, in wrought iron or steel pipe lines, should be of long radius, and made of the same class of pipe as that used in the line.

6. That in running services, where same are tapped into the main, brass street elbows and service tees, put together with graphite and oil applied to the male threads, to insure tightness without sacrificing flexibility, are an absolute insurance against ruptured mains or sheared services.

[Prepared for the JOURNAL.]

Purification.—No. I.

[By A. S. B. LITTLE.]

First, how to comply with the law; second, how to do even more than the law compels. That has been the attitude of gas companies in their consideration of sulphur removal, since Soho Foundry astonished the natives during the time Murdoch sought and found light in the "Black Country" district of England. During the last year considerably more attention has been given to the subject of gas purification, by the removal of sulphur, than in any similar previous period since the inception of the industry; and, judging by the trend of thought, much more good is likely to result than through similar efforts during any other period. Most new methods are good, and many are distinct advances in their aim at perfection.

A "dour Scot" once said, "You all know I would be the first man to admit I am wrong if anybody convinced me; but show me the man who thinks he can convince me and I will soon put him in his place." That is about the attitude of gas men towards new ideas in gas purification methods. We believe credit for the awakening should be given principally to Herr Feld, of centrifugal washer fame; but it is a question very much open to doubt if progress will proceed along lines advocated by him. In the United States the field for the Feld washer is not extensive, and, therefore, we do not anticipate any revolutionary change such as this mechanical-chemical wet purifier would call for.

Ever since gas was first produced, on a commercial scale, for domestic and industrial use, one of the chief trials of the gas manufacturer has been to devise machines, and perfect means, to absorb and remove the sulphur compounds. This was a task first set him by local authorities, and some of the restrictions put upon the sale of gas containing excessive sulphur compounds, were almost sufficient to put the struggling infant industry out of existence. Later, when the most iniquitous of the regulations were relegated to the records of past history, gas engineers voluntarily returned to a consideration of the best methods for the removal of carbon bisulphide, feeling that, before it became necessary to use coal high enough in sulphur to cause a nuisance from excessive compounds, a method ought to be devised to allow of the partial or total removal of the excess, so that in times to come no cause for complaint would be forthcoming at the hands of the public or their representatives (a distinction *and* a difference).

A brief review of what has been done, a summary of existing methods, and a resume of innovations likely to result in change for the better, will be the subject of our present article. The time is opportune, because everybody who endeavors to keep up with current literature, as it affects the gas trade, must be aware, from the printed records, that in all countries strenuous efforts are continuously and continually being made to make the gas free from fault at no enhancement of production cost. To those captious critics of gas companies, who are all the time seeking to discover by what nefarious practices the public is being deluded and deceived, it is well to point the moral of the dual story arising out of the action of two companies situated so widely apart as Portland, Ore., and Coventry, England.

Notwithstanding the fact that there is no law compelling companies to remove carbon bisulphide in these two distant districts, voluntary efforts were made to dispose of this deleterious compound, and that at considerable expense not calculated to produce any direct pecuniary returns. That has been the broad policy throughout all civilized lands, and Public Service Companies are entitled to great credit for their desire to create a greater demand for their product by giving better service or more suitable product at no increase in selling price.

It was the intention to write up the subject of purification in 5 pages of the JOURNAL, but it would take more nearly 500 to do justice to it. Let us, then, endeavor to treat of main principles in such a way that it will lead to a thorough discussion. Any article that can stir up interest to this point will act for good, even if, in itself, it has no great depth. We must admit we have made little progress. Gas engineers show a lack of interest in sulphur, and actually this is the one fault in gas which we know least about. To all intents and purposes we may class existing purification methods as little short of failures.

The history of gas purification is full of failures, with few successes to counterbalance. Of the first efforts we know little, but recent researches have shown that the desire of the progenitors was to promulgate, for reading in later years, reports of results achieved in passing gas through liquids—always a solution—and, it would also seem, generally containing or consisting of lime and water. To a limited extent and with less success, efforts were made to utilize the ammonia in the gas for the purpose of extracting the sulphur compounds; but, possibly owing to the greater hopes of success in working out many more of the easier problems that confronted the earlier pioneers in this peerless industry, efforts towards the solution of the problem of continuous purification in inclosed vessels lacked continuity, and consequently failed. In these cases, until quite recently, failure seemed to be synonymous with cessation of activities. The result was, dry lime boxes, these being less difficult to work, and, on account of there being less competition amongst power and light producers, the progress made in purification was of little note.

For several decades quick or caustic lime held the field. To begin with, the production of spent lime was not much more than the farmers could take care of. It was gotten rid of in many cases with little trouble and no great loss of time. Consequently, the important point of public nuisance was not greatly felt. If lime had to be stored, gas works were not near enough to densely populated districts to make the local nuisance a public one. Later, as the farming districts receded, gas production increased, spent lime became more abundant, and, consequently, harder to sell or give away. And last, but not least, it became more easy for the authorities to test for sulphur compounds, which made gas companies remove more of them. Then the problem of purification became paramount. It is so still, although few think so. It is safe to predict that, within our time, H_2S and CS_2—with possibly also CO_2—will be unknown in gas.

Nearly 50 years ago the English authorities had laws in effect limiting the sulphur compounds in gas to 20 grains, and as the means of testing were not very efficient, it is doubtless the fact that more often the gas contained nearer 40 than 20. At that time low sulphur coal could be had in any quantity, and as heats in the carbonizing plant were very low, quite a lot of the total sulphur must have remained in the coke.

It has always been known that ammonia (under certain conditions) has a strong affinity for CO_2 and H_2S, and we expect to hear of advances in this class of purification before many years. In looking up this subject much useful information was obtained from an article of Mr. G. M. Gill, in the *Journal of Gas Lighting*. He refers particularly to the experiments of F. C. Hills in the early 60's, for the removal of CS_2. It appears that in this process ammoniacal liquor had previously been used for hot washing the gas and consequently contained carbonic acid and sulphuretted hydrogen. For its removal the liquor was heated to a temperature of 180° F., which drove off the two acid gases and part of the ammonia contained in the liquor. In addition it was found that part of the ammonia driven off was washed back into the liquor, thus producing a purified liquor of ammonia, perfectly alkaline, and hence in a fit state for the purification of the gas. From this Mr. Gill deduces the interesting point

that this purified liquor, after being reheated, retains a considerable portion of uncombined ammonia, and is, therefore, in a suitable condition to remove CS, by hot washing and scrubbing the gas. "Newbigging" touches on this subject also, but does not help us much. Many interesting references and records are given in the above named paper (May 9, 1911). It should be put on the files for ready reference by all ambitious gas engineers.

It seems a long period, from ths start of gas manufacture in 1797 to 1874, but it was not until 1874 that the action of sulphur on lime in gas purifiers began to be understood, and this led to the suggestion that alkaline sulphides could be formed in a solution by passing into a vessel the gas previously cleaned from CO_2.

In 1875 Patterson suggested the use of four vessels with ammoniacal liquor; in the first and second it being desired to remove the CO_2, while in the third the sulphuretted hydrogen would form the sulphide necessary for the subsequent removal of CS_2, the fourth was designed for a catch-box to take out any traces of H_2S that escaped the third box. By careful manipulation, and discharge periodically of the various liquids, it was hoped to effectively take out all CO_2, H_2S and CS_2, but from what we can now learn, very little was done to put the process through a severe test. It is somewhat out of the province of this article to treat of the various methods by which it has been hoped to remove sulphur compounds by wet scrubbing and washing, relying upon the liqueous ammonia to combine with the sulphuretted and hydrogen. Many experiments are being carried on and, if the results amount to anything considerable, they will be treated of separately.

Mr. F. C. Hills, previously referred to, was the first man to introduce the use of hydrated peroxide of iron for the removal of H_2S, and for many years this was kept up with the addition of lime in separate boxes, for taking out CO_2, either before or after the oxide boxes. It is safe to say that, even if known methods of reviving lime are put into use, such as that of George Hislop, or supposing other and better methods are found, the objectionable feature of bad smell from spent lime will prevent a return to that method of sulphur removal, unless in insolated instances. Such being the case, better is it for us to deal principally with other methods, because of such being those always encountered in gas works in this country, and it behooves gas engineers to study the subject profoundly.

Good work has been done with oxide in many cases; good work is still being done; but in most cases this is not due to any too deep thought having been given to the subject. Without fear of contradiction, let it be said that our lack of knowledge of what goes on inside a purifier is deplorable. Very few know what purification costs. Quite a number know little about the material they use. Even experts disagree on the kind of material, and friendly argument about the possibility of using anhydrous oxide (burnt in the removal of the sulphur) is rampant in places a few miles apart, where one engineer claims benefits from its use and another equally bold, states, "It can't be done." As a noted listener once said, "Keep on boys; you are both right." So it might be claimed with various oxides and their advocates. All may be right, but for goodness sake keep up the argument and give us a chance to get at the exact facts.

In answer to recent suggestions, tabulated and sent out, many gas men in America say in effect, "We do not doubt it can be done, but we feel we cannot do it here. The rotation system may be all right with the enormous boxes they use in Europe, compared with those we have here; but give us our small boxes and let them have their long ones." Never did pratices differ so much in such an important industry as these. In England we are told the boxes are too large. In America we are laughed at for our deep layers. Europe goes strong on so-called hurdle grinds; America will not have them. Labor saving devices flourish in Europe. Here we may have a chain and buckets, two wooden funnels and a crocodile-tail spout. Who is right? There is only one answer; that is, "Where does purification cost least, and where is it most effective?" In Germany or in Britain a man is a failure if his material costs him anything. In effect he says, "I borrow a cheap product and put something valuable into it that is a nuisance to me, but is wanted by the lender. Just because I do not need it and and he does, should he get it for nothing?" That is not the policy that made Isaac Carr, at Widnes, the King of cheap gas. The German at home sees his spent oxide through colored glasses, the ferrocyanides being dear to his heart and expensive to the worker up of Prussian or Berlin blue.

"What's the answer," to speak colloquially? Honestly, I do not know. Travels in Germany, France, England and Scotland fail to show, but it makes one pause to think that the muscle which directs the labor sawing machinery in the German re:ort house, is fed on the ferrocyanides that come from the spent oxide. Is our backwardness the fault of the gas industry, or is it due to allied trades, which should, but do not, spring up in the wake of the wideawake gas manufacturer.

In regard to the recovery of sulphur, it may be that the mineral product native to America is so cheap and plentiful that factories fear to compete. If so, it is a bad thing for our gas companies. Why? Because of the decrease in revenue from loss of valuable byproduct? Maybe; but not entirely so. We were just thinking it might make some gas men a little more particular with their operations if they *had* to put 55 per cent. of sulphur into their oxide. That is what the vitriol makers insist on when they buy spent oxide in England.

Several gas companies have cast longing eyes on the oxide that is now being thrown away (Consolidated Gas Company, New York; and Detroit City Gas Company); but no material good seems to have resulted. It might here be suggested to President Dewey of the "Literary Department," American Gas Institute, that this question is one he might try to bring out for discussion at the St. Louis meeting: Also, and to get quicker and more continuous action, it would be a good policy for gas men to take advantage of the open columns of the JOURNAL and start a series of papers. Every man who has even thought of working up his spent oxide, and especially those who have done any actual experimenting, should relate experiences. Oxide purification is bad enough in any case, but where the gas company has to pay for carting away the spent material, it is deplorable. In my own trifling way, I have sought to start something. Despite the chaff of my friends, I lengthened the name of our Company by adding "& Chemical Co.," with the sole thought of later on getting into the business of recovery of spent oxide. Further, in the book on purification, some interesting facts were given about the manufacture of sulphuric acid. It has been said these efforts will end in nothing, but in such case the laugh will not be entirely at my expense.

A study of present day methods of purification is not out of place now. It would be well to deal with the subject from the viewpoint of American practice, but it is well nigh impossible to get any facts from those responsible. An effort was made to secure a recital of experiences, at an expense of nearly $640, but the lack of replies was astonishing. It was found, however, that not *one* company makes use of old oxide except to fill in vacant lots or pave gas works yards.

A count has just been made of the number of companies admitting air to the purifiers along with the gas. Sixteen report doing this, nearly 300 state they *do not*. Is there any hope for better results when such a ridiculous record is shown? This is the country of high priced labor and yet *there* is chance to save a great deal of labor, and it is not taken advantage of. Another point, I do not know of more than half-a-dozen companies that rotate their boxes so as to put the foul one last, where the pure gas with air in it will revive the partly spent oxide and make it fit to go on as the first box again. In the pamphlet recently issued many interesting records are given for this system, so it need not be dilated upon in this necessarily short article. The present day methods seem to lean to small purifiers, deep layers of oxide, up-run only on the gas, no air admitted with gas, free steam allowed to run in to oxide in cold weather, straight trays or sieves.

Regarding the first, a lot can be said in extenuation of the small purifiers. In fact, lack of space has kept many a gas company from putting in purifiers that were really needed. Lack of capital also plays an important part, and it can be said this should not be so. In Europe, despite what has been said to the contrary, a company will spend money freely to save labor. It is realized that 1 man's labor at $5 a week means the interest on over $5,000. In a purifier room it means more than that. The small box and the large extra man mean constant distrust. No gas man need be told he takes a risk every time he opens a purifier. Further, the small box means compulsory rejection of oxide that would still be good for a long period if the purifying area were larger. Many gas companies are now forced to use coal that is higher than 1.25 per cent. sulphur, and the purifiers which were formerly large enough, are now small. In comparing areas with those of European practice, it is well to remember that over 80 per cent. of gas there is coal gas and that the coal is nearer 2 per cent. sulphur than 1 per cent.

Next; what about the deep layer? A deep layer with hurdle grids is not so bad, but the man who uses the deep layer with ordinary

grids has much to learn. Two layers of 15 inches are better than one of 36 inches or more; much better. And yet we know of a prominent gas engineer who relies on and insists on the layer being over 6 feet deep.

Why are boxes changed often? Is it because of fouling? No. You will find that for every box that is shut off because gas shows foul, four are put out because of back pressure. Again, for every box that is put off because it shows foul gas, more than half of the total number are forced out of business because the material hardens and cracks, or through contraction leaving a free space between oxide and sides of box. This contraction, it can safely be said, is due to the oxide being put in excessively wet. The drier the oxide the better it works, but so long as artificial rust is used it will be compulsory to thoroughly wet the oxide.

Hurdle girds are very largely used in Europe. They are undoubtedly good, even if costly. When they are used, back pressure is almost unknown. The writer has had no practical experience with them, but has many friends who swear by them, notably, John Young of Hull, who knows American practice as well as he does English, which is saying a very great deal. Reference should be made to the modified and cheap system of "bridge" grid introduced by Walter Ralph Herring at Edinburgh. The present manager there read an able article on the working of the system, and it has been recently reproduced and mailed in "The Safe Way" to most gas men in this country.

As regards the admission of steam, and regulation of temperatures, reference should be made to the able paper, by Mr. H. L. Rice, of Aurora, read two years ago at the Illinois meeting, and in the JOURNAL a complete report of the excellent discussion was reproduced.

The writer has recently had some interesting experiences with purifiers handling 4 per cent. sulphur coal, and had occasion to try the benefits derived by allowing, for a short period, some gas containing ammonia to slip over to the purifiers. The activity and efficiency of the material for a long period following the introduction and shutting off of the gas which had by-passed the scrubber were really astonishing. It may be remembered that this method was strongly advocated by Mr. Thomas Glover, at one of the Eastern Association meetings at Ipswich.

[OFFICIAL REPORT—FURNISHED BY THE SECRETARY—CONTINUED FROM VOL. XCIV., PAGE 1258.]

PROCEEDINGS, THIRD ANNUAL CONVENTION, PENNSYLVANIA GAS ASSOCIATION.

HELD AT READING, PA., APRIL 12, 13 AND 14, 1911.

THIRD DAY—MORNING SESSION.

Discussion on the Ganser Paper.[1]

The President—Is Mr. E. F. Davis, of Chester, present? He is on the programme to open this discussion. As far as I know, he has not been here. Now, gentlemen, this very valuable paper is before you. Personally, I know of no more valuable paper that can be written, that tends to increase the sales of the gas company. Let us have a discussion of it. Who will open it?

Mr. Rhoades—A point Mr. Ganser mentioned that I think I can help him out a bit has regard to the furnace coal. We did use the method Mr. Ganser employed, and with more or less success, according to the fuel used in the furnace for heating. Frequently we had the complaint that, with certain size coal, the method allowed the coal to rather cake and hold it up, thus not allowing it to feed down. In some instances the fire would almost go out, although the fire on the surface was seemingly a live one, which, of course, was annoying to the parties working the furnace. A type of heater that will quickly overcome this objection, and at the same time increase the amount of radiation which you can carry on one of them, is the "Gibbs," made at Watsontown, Pa., by the Gibbs Foundry Company. We have used them with very good success. Most coils will carry a 50-foot radiator and a tank (possibly a small radiator) in connection with it. In fact we now have one of those coils that is carrying 200 square feet of radiation, and the user says he has no trouble whatever, and that his rooms are warmer with this radiation than before. It is of rather peculiar type, and it might be interesting to narrate a feature or two about it. It is quite nearly a cylindrical shell made, in either cast iron, brass or aluminum, just as one cares to go to little or much expense. Of course, either brass or aluminum, is for overcoming the objection of rusty water, since cast iron is almost sure to carry rusty water at any time, especially if the waters are at all impregnated with mineral salts. The shell runs from 8 to 20 inches diameter, so I think it will suit any form of furnace. Imagine a cylindrical shell about 4 inches deep—that is, just the exterior thickness—with tubes all though it, on the principle of an ordinary tubular boiler, set above the fire at an angle of 45°, from 15° to 40°, generally between 15 to 30, with a slant towards the back, so that all flue gases from the fire passing upward must go through those tubes, but they are held at the back, from passing under or up through the chimney by this slant of the shell, so the tendency is for the draft to take them right through the flues. This increases the size of your heating surface immensely, and you would be surprised at the difference in the temperature of the flue after putting one of these heaters in. A flue that, before the heater was installed, with an ordinary fire, or one that would be sufficient to heat a house in cold weather, would be hot so that you could not hold your hand on it, after the installation of one of the heaters is not at all hot. It, of course, has a certain amount of heat, but it is not a hot flue at all. You reduce your chimney flue gases considerably, all of which are consumed through being put into your tank. On a very large firebox a 20-inch heater would be equivalent to carrying about 300 feet of radiation. Where several of the radiators are not used to their full capacity, as in up-stairs bedrooms where only the chill is to be removed from the room, and a greater volume of heat is sent to parts of the house where heat is needed. In use of a hot air furnace this addition thereto insures almost ideal conditions for house heating. As I said, we installed three, one of which is in a very large house, having 11 rooms, and the party said he had saved the cost of the installation last year by the savings it effected.

Mr. Fancher—Let me say that the modern or all-gas kitchen is something that always appealed to me, and in other places it has something that we worked on very strongly. In New York they install a great many. They work through the architect to such an extent that now hardly a building is designed without specifying furnace connections, which takes away from us or from the plumber the thought of installing them. Our people in Lebanon are quite like those who live in Missouri. We have to show them. It was first a hard proposition, but we have them going. A party told me last Monday he was building two new houses without provision for a coal range in either of them. As I also heard that he never used gas for cooking, it looks as though it might come our way. Another thing. We have discovered only one furnace fitted for installing a coil. I think we installed one that had a plate on it, so we removed the plate. What little work we are doing in Lebanon is causing the dealer to order all his furnaces so that we can install without drilling, which will take away a great deal of hard, and often difficult, work. I have not heard one complaint up there. I did, however, have this experience. One time we could not get the water quite hot enough. Having re-studied the proposition we found that, running an inch hot water line with a return of ¾, we overcame it very largely. Those who have not tried that proposition should try it and see how well it will work. We are working piping radiators for heating the kitchen, by going to the boiler and heating the same to give a sufficient amount of hot water and radiation for heating the room. I think that if we persist along the lines we are working, Lebanon will soon be a town of modern gas kitchens. A little circular that I have here was gotten up to give away. It is not what it should be, because it shows a standard type of stove, whereas it ought to be the elevated or cabinet range. People just put that in their pockets and take it home and study it over. We have had a number of inquiries about it. Some of them don't just understand, and it is all made perfectly plain. I am sorry that I did not bring more of them with me to give you if you want them. I got hold of a cut and it looked so good to me that I have borrowed it and had a lot printed, and we are going to keep drumming along on the modern kitchen, because we realize that if the gas goes in the year round we are going to have better consumption, better friends for the Company in every way. I will give this to Mr. Ganser, although I am not sure he desires it. That is all I have to say. I know it is an ideal condition, having tried it.

Mr. Chewning—Several of these heating systems have been installed in Reading prior to our going into the thing, and it was only in this example that we had any complaint. It was said they did not have enough hot water in the kitchen or sufficient heat from the furnace. Well, we covered the pipes with asbestos, thinking that might do some good; but it helped very little. Then we inquired

(*Continued on page* 10.)

1. For the text of the Ganser paper, see *ante*, p. 1256.

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NEW YORK, MONDAY, JULY 3, 1911.

BRIEFLY TOLD.

OBITUARY NOTE, MR. ALBERT RIBLET.—Last week we had occasion to note in briefest manner the death of Mr. Albert Riblet, whose summons came the 15th of June. At this time we are enabled (through the attention of his brother, Mr. William Riblet) to add thereto the following facts from his even-paced, useful career. Albert Riblet was born in Troy, N. Y., November 5th, 1847, and in his 16th year (March 11th, 1863) came to New York to take up the position of junior clerk, 14th street station, Manhattan Gas Light Company. Eight years later (January 1, 1871) he became Assistant Superintendent of the station, under the direction of the late Mr. William Combe. Fifteen years later (March 1, 1886) he was appointed Superintendent of the station, remaining in charge until removed by death. His death is all the more distressing in that, right to the day prior (June 14th), he was in the best possible physical shape; but he succumbed to an acute attack of indigestion that failed to respond to treatment. He was a member of the Society of Gas Lighting, and was also promnent on the rolls of the Seventh Regiment, N. G., S. N. Y. Naturally most of his work in connection with the industry was along coal gas lines, in which direction his knowledge and practice coped with that of the best. He had considerable mechanical genius, and many improvements in devices connected with the operation of coal gas manufacture are traceable to his thought. His immediate survivors are his widow, a son and daughter, and his brother.

A DAY OFF! ALSO A NIGHT.—Gas men may have had pleasanter outings (and innings) than the one the history of which is here to be recorded, but, come to think of it, its real history cannot be recorded, for to so specify one would have to note each bit of kindness shown, every aid pleasantly proffered, every attention fraternally offered—an impossibility it would be. To begin with, the afternoon and evening of June 22d, were selected as the proper diurnal divisions during which the Society of Gas Engineers, of New York city (the working staff of the Consolidated Gas Company, with all its known concatenations) would have its annual reunion. The party, chaperoned by President Cortelyou and Chief Bradley, in motor vehicles of many sorts (all up-to-date, of course), left the "new office building" of the Company on Irving Place, at 3:30, bound for Casino Beach, back of the combers of which tower the lofty buildings of the Astoria Light, Heat and Power Company. The playground, just convenient to the immense generating houses of the Company, having been reached, the 20-odd members of the "White-Cap" baseball team took the bat, the 20-odd "Red-Caps" occupying the field. To be really truthful the game beggared description, although it should be chronicled that the neatest home run of the contest was scored on a foul ball that passed in direct line over the catcher's head. After many mistakes the "Reds" came in to bat, and with them came a northwest squall of wind and rain, brilliantly illuminated and loudly punctuated by vivid lightning flashes and resounding thunder crashes. This visitation of nature drove all to cover, and dampness reigned over ways and works in Woolsey's warren—or point. Also, the supper tables had all been beautifully arrayed on top of the cone in the pit that awaits the placing therein of the second largest gasholder in the world. But the engineers were equal to the emergency. The corps of "Dixielanders" engaged to serve the supper, aided and abetted by scores of willing hands—the three busiest in the bunch being Messrs. McLean, Fogg and Cross, the latter taking over the duties of director—the seats which had been arranged for the subsequent vaudeville show in the station meter house, now in course of completion, were removed and replaced by the festive boards with their appropriate furnishings. The substitution from pit to house was so speedily accomplished that supper hour was called almost at the one originally set therefor. At the signal the guests assumed their places, the seat of honor being occupied by the Society's especial guest, Capt. Van Duzer, U. S. N., whose clever courtesy and continuous attention, were so greatly appreciated by the American Gas Institute during the visit last year of the Institute to the Brooklyn Navy Yard. It is such a long time since this service of walnuts to wine was had, that especial reference to its merits now would seem like ashes. However, everything went off without a hitch, although candor compels the remark that, the reverberations of the colored soloists and banjo-pickers were not far in volume from those sounded outside the structure by Pluvious and Jove. Supper ended the Society held its annual meeting. Presided over by Vice-President W. Cullen Morris (in the unavoidable absence of President George E. Woods), the regular order was quickly disposed of. Notable in the proceedings were these things: The fraternal action taken respecting the lamented deaths of members, Postley, Riblet and Killian, during the year, and the election of the following officers for the current year:

President—George E. Woods.
Vice-President—W. Cullen Morris.
Secretary O. H. Fogg.
Treasurer—Gilbert Francklyn.
Executive Committee—Peter Young, A. H. Hall and D. D. Hudson.

The meeting having adjourned, a speedy transformation of banquet hall into audience room was witnessed. Everything being in readiness, a large curtain, to the extreme east line of the room, slowly raised, and the audience, facing north, beheld as well an appointed stage as could be wished for. Drop, call, footlights, everything needed on, for, and to the histrionic platform was there. The setting was: To the left, a well-appointed office room of a gas company; to the rear, several doors leading into the private rooms of those "higher-up," to the right, an outer room for the call boys, the elevator shaft door. the colored porters, etc. No detail was omitted. The performance that followed would have done excellent credit to the members of a professional vaudeville set, well trained in their acts. Sketches of humorous sort, and many; both vocal and instrumental music of a really high order, dancing (the programme, which in itself was a marvel of the printer's art, listed one great number in this line as "The Egyptian Ballet and Hindoo Ripple Dance," staged by Peter Young) and interlocutory work, filled out a play bill ae of genuine merit. The show was punctuated, however, by one bit of work that simply brought down the house. Just after the "Ripple Dance" number, the elevator door opened and out of that carrier nimbly tripped the glorious old chief, Mr. Bradley, Old, did I write? "Well, you have contradicted yourself here" it is exclaimed. "How could an old chief trip nimbly?" Well, the writer can but reply that the Chief's gait was as nimble as that of the misty young person who led the Hindoo Ripple affair. "Nimbly" going for fact, then, the Chief greeted the hall boys pleasantly, bade good morning to the office force, stopped for a moment to make written note of something to which the elevator man had called his attention, and then briskly on and into his office. It was realistic to completion. Then came the epilogue, the prelude to the curtain fall,

the descent of which marked the close of a most enjoyable outing time that had in it every element (order, wit, originality, precision, capableness and fraternality) going to make success.

THE STATUS OF GAS FOR LIGHTING PURPOSES.—A most important aspect of the gas industry, viewed commercially, is its value from a heating standpoint. While this is literally true, it must be remembered that mantle lighting is the principal use of artificial gas for heating purposes. This is seconded by the use of gas for domestic cooking and water heating, the other applications being industrial fuel, domestic heating, power, and, lastly, open flame lighting. The first and last named (mantle and open flame lighting) have reached their present development to a very large extent without the assistance or the direction of those interested in the selling department of gas companies. This is not true of any of the other applications, and it is a fact of moment that the order of their importance is directly proportional to the efforts which had been made to encourage their use. When gas lighting heads the list without concerted assistance, what could and should it become were the proper attention paid to its promotion and use? For cheapness and quality it is yet to be excelled by any competitor suitable for a modern office or dwelling, and its future rests with those able and aggressive gas managers who use gas, who believe in gas, and who push gas for lighting as well as for other heating devices.—LUMINO.

CURRENT MENTION.

THE proprietors of the Brown Hoisting Machine Company have named Mr. Harvey H. Brown to succeed his brother (the late Mr. Alexander L. Brown) in the Presidency of that well-managed corporation.

THE management of the municipal gas works at Fredericksburg, Va., looks to be making good in the continuance of the record established when Mr. B. F. Bullock assumed charge some years ago. In his report respecting the affairs of the works, for the year ended June 1st, the gain is reported at 7.75 per cent. over last year, and this represents a cumulative gain, since the new works was put in commission in 1906, of 125 per cent. The balance to credit for the year was $4,972, and Superintendent Bullock declares that it will be necessary in the near future to provide for further enlargement of the generating division. The pronounced success of the plant has, however, accomplished one very untoward thing, which thing was as certain to develop as its development is reprehensible. The City Council, looking with longing eyes and covetous thought to the comfortable balance in cash that is to the credit of the gas division of the city's enterprise, already more than murmurs that this sum would go far towards assisting in paying for certain needed municipal measures. 'Tis the old cry of taxing the users of gas, in the cost of the latter to them, that the new user may share in the benefits for which the user pays all. Set aside a sinking fund to meet the original cost of the plant within a 15-year period, to provide for up-keep of the plant in the way of extensions, and let every taxpayer thus share alike in the revenues afforded.

THE June issue of "The Gas Arc," fresh from the press of the General Gas Light Company, Kalamazoo, Mich., is an entertaining number. Prominent features thereof are a double-page illustration of a large factory building fairly ablaze with illumination afforded by sensible use and placing of the Humphrey arc lamp, and several specimens of wit, one of which reads as follows: "Not long ago a lady resident of Clinton, Ia., not knowing how to successfully induce a prepayment meter to continue delivering gas, sent for one of the Highland forces. The expert carelessly put a quarter through the slot, the familiar click was heard, the gas came on, and the lady exclaimed: 'My; isn't that fine? Did the quarter get to the gas office as quickly as that?' The diplomatic reply was: 'Madam, gas beats the electric current every time!'"

THE Gas Machinery Company, of Cleveland, O., has been authorized by Manager Covert to construct for and install in the works of the Paducah (Ky.) Light and Power Company, a set of water gas apparatus of the former's plan and type. It is also arranged that the Machinery Company put in at the same point a set recently removed from an Eastern plant, thus insuring to the Paducah folks a duplicate machine.

STILL another contract for the Gas Machinery Company, is the contract for new benchwork in the Brandon (Manitoba) works. The Brandon concern, which entered the field something over 2 years ago, has been a money maker from the start.

THE summer outing this year of the Lynn (Mass.) Gas and Electric Company's employees' Association was held at Nahant, the afternoon and evening of the 20th ult. About 150 participated in the festivities, which included a camp dinner in the afternoon and a supper in the evening. The sports included a ball game, a water wading contest, a team bowling competition and individual prize bowling, and a generally good time all round. Our correspondent adds that the pair who bore the brunt of the planning, respecting the actual programme were Messrs. F. H. Mace and Philip Moodey.

"B. M.," sends the following from Utica, N. Y., under date of June 27th: "The lofty standpipe at Trenton Falls was decorated with many flags on June 27th, which date marked the meeting of the Empire State Gas and Electric Light Association, in the Hotel Trenton, close to the Falls. The hotel itself was absolutely hidden by the Nation's colors. An ideal June day, an attendance of 54 "good ones, and true," from New York, Syracuse, Rochester, Utica and other points, made good the technical and social sides. While the brunt of the entertaining, which was perfect from every point of view, was borne by Mr. W. E. Lewis and staff, of the Utica Gas and Electric Light Company, still their burden was lightened by the efficacious, persistent work of Mine Host Troup; and this time there is much in a name. While there were neither set speeches nor specially prepared papers for the literary section of the active sessions, it is nevertheless true that at a previous meeting the question as to the relative merits of electric, gasoline and team motor trucks, for the use of gas and electric companies, had been considered at some length. The discussion of this subject was taken up this year and carried on for some time. The consensus of opinion arrived at seemed in favor of the electric vehicle. The Utica Gas and Electric Company has in operation three of these trucks, all of which have worked satisfactorily and have proven economical. The Rochester Railway and Light Company has about a score of them, and the reports from the representatives of that concern present were likewise favorable. The matter of collections was also taken up, and this feeling-full topic (as one delegate put it) was handled from many points of view. At 1 P.M. dinner was served. to the accompaniment of flowers, music and—oh! such viands! Mr. J. C. De Long, of Syracuse, was an acceptable Master of Ceremonies. Dinner at an end, Photographer Greene took two or three shots at the party, and then followed an inspection of the great power house of the Utica Company—this visit was solidly marked by the courtesies of the house foreman, Mr. L. F. Robinson. The sessions were at an end at 9 P.M., and the leave taking certainly must have appealed to the Empire body's hosts through its spontaneity and heartiness. The officers elected were:

President—M. Jesse Brayton, Utica.
First Vice-President—R. M. Searle, Rochester.
Second Vice-President—C. W. Curran, Syracuse.
Treasurer—A. B. Beadle, New York city.
Secretary—C. H. B. Chapin, New York city.

In the votes of thanks that were adopted none was more pronouncedly earned than that awarded to Secretary Chapin, whose conduct of the Gas Association's affairs is nothing short of admirable."

BOOK REVIEWS.

Field's Analysis, 1910.—The latest edition of this admirable collection of data concerning the financial and operating accounts of the principal gas undertakings in England, Scotland and Ireland is at hand. This publication is now in its 42d year, and the data will undoubtedly be used to advantage by operators of American as well as English undertakings.

Meter Reading and Hints to Gas Consumers.—Under this title the department for inspection of gas and gas meters, of Newark, N. J., has issued, for free distribution, a pamphlet which does credit to its author, Mr. Ellsworth Francisco, the City Gas Inspector. The kind of information contained in the folder is sure to be used with good effect by consumers of all grades.

Before and After Taking.—The thermometer tells the tale of the housewife's happiness due to the gas range—another Chicago Peoples Gas leaflet.

The Escape of Gas from Coal.—Technical Paper No. 2, issued by the Bureau of Mines. The results covering tests of nine kinds of coal, by Messrs. H. C. Porter and F. K. Ovitz, are given in this bulletin.

Bulletin of Abstracts, Vol. V., No. 4.—The set of "Bulletins," dated June 1st, issued by the American Gas Institute, covers a wide range of subjects, and the method of handling these reflects great credit upon the editor-in-charge.

(Continued from page 7.)

into the method of firing, and often an examination or two in this instance, we determined it was simply a question of firing the heater. We placed a line of brass coil on one side, about 6 inches up above the fire, and returned it through and to the same side, to find it was just a question of the pipe holding up the fire so that it would not settle. He had a bad fire, that accounted for his trouble. By giving him little points of similar nature, and looking it over occasionally to see how it was getting along, we finally had him perfectly satisfied. He got as much heat as he did before; now, of course, the kitchen is a "grand thing." Another matter I would like to ask Mr. Ganser about is as to the necessity of putting a safety valve in the boiler if such were not used when the coal range was in action.

The President—Anything else, gentlemen?

The Secretary—I do not believe a safety valve is necessary. Those who have had experience with these hot (very hot) feed water tanks, and on running a high fire in the furnace, will notice that the water backs up through the cold water line and even back into the city water mains. Yet, even if it gets too hot there is really no danger of explosion. I never knew it to be necessary to put on a safety valve. Another thing along the line of gas kitchens. During the last 2 months we have had our local demonstrator using a gas range connected-up in the window, to bake bread and pastry 2 or 3 winter afternoons or evenings. No doubt this may seem funny to all of you, but you will be surprised at the number of people who look in that evidently had little knowledge of bread or pastry baking. I am quite sure the majority of gas users buy their bread and pastry. I think it is a great thing to get people to use their ranges in a general way. Oftentimes after installing the range we fail to follow it up to see whether it is used or not. Now, just think; if you can have those who install new ranges to do their bread and pastry baking therein, how you are increasing the gas consumption. It would mean, say, an additional 500 feet a month or 6,000 feet a year, right with your present installation. Very few of your people are cooking bread and pastry on their gas ranges, since it is much easier to go to the baker. We found it very instructive to have a demonstrator work right in the window.

Mr. McCarthy—As to the check valve for use on the meter, where a meter is installed, and you have an excessive amount of hot water, either in the coal stove or outfit of gas stove kitchen, it is imperative to have one for the simple reason that if your hot water goes back (as Mr. Merritt said) into the city mains, you destroy that meter, and likely have an outright conflict with the water company. In a majority of cases the water meter is somewhat of a check valve; and a majority of the water companies insist on such being placed before or after the meter when it is installed, for the protection of their meter; and, of course, where there is a check valve more necessity exists for putting on a relief valve.

Mr. Chewning—I doubt very much if a meter would tend to hold the water back at all from returning to the mains, the flow would be so gradual. Hardly a meter made (unless such be the Worthington positive meter) that would offer any resistance to this very slight flow. The point Mr. Ganser made was that the meters usually have check valves with them in order to prevent any back pressure coming on the meter, so it is this check valve that keeps the water from coming back.

Mr. McCarthy—The Reading ordinance calls for the placing of a check valve on the meter?

Mr. Chewning—Yes.

The President—Before it is forgotten, Mr. Cresson incidentally told us yesterday that they succeeded in convincing some of the Eastern architects to leave the chimney in the kitchen out of the building entirely in some of their better class of houses—quite an innovation—so they are absolutely compelled to use gas all the year round in their kitchens. This is a pointer for us all. If we succeed in having that done a very good promise is ahead that we will get more of their kitchens.

Mr. Murdock—In Joliet we had quite a lot of builders, and we put the argument up to the local builders that they cut out the chimneys and cut down the expense. It made quite a saving in expense.

The Secretary—Of course, all architects have wrappers for plans and specifications, and we conceived the idea of advertising on those wrappers. It practically costs 5 cents for us to state right on the wrapper that this architect specifies all-gas kitchens, etc. This goes into the hands of the builder and of the prospective owner, and there right before him in great, big print on the wrapper the architect declares, "I specify them." It is a mighty good way of reaching the people through the architect, and I believe every architect will take that up.

Mr. Ganser—Will Mr. Rhoades say whether any portion of this waterback of the Gibbs heater goes into the fire.

Mr. Rhoades—None at all. It rests about 4 inches above the fire, and the slant forward giving a wide line, the firing gives no trouble whatever. It practically would not change the firing of the furnace in the least.

Mr. Ganser—Has Mr. Rhoades had any experience in the early fall and late spring with that type of waterback?

Mr. Rhoades—Yes, and it is ever so much more successful than the coil. In using hard coal, from the size of pea, chestnut, nut, egg, or even larger, always a certain amount of flue gas burns from 1 to 3 inches above the fire, which flue gas is caught right at the base of this type of heater, and as the secondary air flow burns the gas or carbon monoxide right inside the heater, you thus get a greater amount of hot water that way than by the other.

Mr. Ganser—We had considerable experience in installing waterbacks that did not touch or go into the fire, and found our most troublesome condition in the early fall, when the heater fire was forced a little in the early morning, then banked the remainder of the day, that the water soon cooled off, the supply being used up there was nothing but lukewarm water the rest of the day, We had partial success in some types of heaters with this type of waterback, but where the draft is carried directly these hot gases pass out very rapidly, we came back to placing the coil in the firebox. Mr. Chewning referred to a very important feature in connection with this equipment when noting the effect of the heating capacity of the heater was reduced due to the installation of the waterback. A heater in house operation is usually about big enough to heat it, in fact it sometimes won't stand 50 square feet more of radiation. You must not under any condition permit the waterback to go against the wall of that boiler, as it will keep a great portion of the fire away from it, and so will reduce the heating capacity of the furnace materially. Hence I say keep your coil 6 inches away from the side of your heater. Have the 2 pipes so far apart that the live coals can fall in and around, and, being 5 inches above the grate, you are away from the ashes, which permits the live coals to fall in there. You must not expect the consumer to go to the cellar and shake the grate simply because he wants hot water, for if you do the coal range has you beaten, for you don't have to shake a coal range fire very often to get hot water; you have a continuous supply, and you must do better if anything than the coal range is doing. You are introducing a new idea. People say, "I am not going away from a convenient thing to go to an uncertain thing." That coil must be placed in such manner that one has hot water constantly. We have in almost every instance more hot water and hotter than it would ever be with the coal range. As to the safety valve, you have all known of explosions of waterbacks to coal ranges, for which trouble there are two reasons, the possibility of a meter being in there with a check valve back of it, or an insufficient supply of cold water. It may be a very small opening in the lead service or galvanized service in the line in from the main; but if you have a particularly good ¾-inch service, with neither meter nor check valve, then the street main is your safety valve, your hot water generated backing up to the street, there is not any danger. But if it seems on going into those rooms that you get a very small supply of cold water you should examine your service, and if it is not good and clear I would not advise you to make the connection. If you have an explosion of the waterback and furnace, not 1 householder in 1,000 will place the blame where it belongs; all will put it on the company that made that installation, it being the easiest thing for them to do. Your workmen were the last ones that worked there, and in introducing something new an explosion occurred. You must use a safety valve. You can make the connection to the kitchen sink and let it run right to the sewer. The water company probably will object to the safety valve leaking at times, but it is a very easy matter to tell whether water is flowing and to shut that up, cautioning people against it. Mr. Merritt refers to the great number of people who buy bread and cake and pastry. We have had innumerable people tell us that they never baked until they had a gas range, and we all know that they can do so better and cheaper then if coal were used. It is up to us to teach the people to use the gas range for baking. It is a very simple matter to secure an increase of 50 cents a month in those bills, as Mr. Merritt stated, which makes a decided increase in gas receipts. Some of our people since buying a gas range do more cooking than they did when using coal. Some women dislike having at all to do with a coal range, and there is no question about it that people who cook with gas are in better health than those who do not. I am not saying this because I am a

gas man, or because I am personally interested in gas kitchens, but it is easier to cook, and to cook better with gas than with coal, the food is more palatable and digestible. They must agree with you if you show them how to prove things, and they pass it along. As to keeping brick chimneys out of kitchens. First, by all means you want these flue connections from the water heater and the waterback, and you want to get rid of that direct. In the summertime you could not get rid of the heat, but it does help with the odors a great deal. In advising your builder not to build a brick chimney, it is all very good if a substitute therefor is provided. Use one of the windows or a cast iron soil pipe, but get that soil pipe at sufficient height and hooded so there will be no back draft. Some years ago, when I was beginning to feel we were on the way to success in the gas kitchen business, I lost a very profitable territory. A draft came down through a little piece of pipe that was stuck through a wall—it had a very crude hood on it—and blew the water heater out. The kitchen was filled with gas. When the man of the house came home he bought a coal range, which range was in the kitchen a number of weeks before we heard of it; and it was not many weeks before I heard of another one. He moved his coal range back in place. Of course, we immediately investigated the conditions, and at first apportunity made a proper installation, and have not had any trouble of like character since. But under no condition attempt to make an installation without consideration of the flues of the gas range and the gas water heater. The heat in the summer going into that kitchen, which is very often separated from the dining-room only by a pantry, causes the dining room to be uncomfortable, so you are getting back to the old condition of an entire hot house, because of a hot kitchen. In this paper here I did not read the cost of installation, as I thought you could look over that yourselves.

On motion, a vote of thanks was tendered to Mr. Ganser for his very excellent paper.

The President—Last, but not least, is the paper by Mr. W. C. Anderson, of Plymouth, on

HOW SHALL WE CONDUCT A CANVAS FOR NEW BUSINESS WHEN THE GAS AND ELECTRIC INTERESTS ARE CONDUCTED BY THE SAME MANAGEMENT?

It is not the purpose of this paper to lay down rules which can be followed fully in every situation, but an attempt has been made to cover the various points by suggestions that in most cases should work out to the best advantage. In communities where gas and electricity are supplied by two separate interests, the one furnishing either commodity is quite naturally anxious to secure all the business offered to it or obtainable, by the application of new business methods, as well as by the use of all the ingenuity that may be exercised in solving the individual problems presented by each prospective installation.

With these two interests combined under one management, the taking-on of new business naturally and quite properly becomes selective. Keeping ever in mind the achievement of the desired results in connection with every item of added business—that of obtaining the greatest profit to the company and at the same time adding a satisfied consumer—this method of selection becomes a not very difficult question to handle.

All classes of new business seem to arrange themselves in a quite natural division, and this arrangement may be fostered by the application of proper advertising through the various means employed, and principally through the personal solicitation of business by the representatives of the new business department.

In spite of the use of the higher efficiency lamps used for lighting by electricity, gas lighting still has a decided advantage in being cheaper. While electric lighting is more convenient, certain sections of every town are built up with dwellings of modest proportions, and occupied by people of small means, who are quite willing to take a little extra trouble in order to effect a saving, and this class of business should naturally be taken care of on the gas end.

Gas naturally occupies the field for domestic fuel, and in the class of residences just mentioned a gas range is more particularly a necessity, especially as in many instances no servant is employed; and, also, because the smaller the house the more necessary it is to do away with the heat that, during the warm weather, would be given off by a coal range. From the company's standpoint this fuel business in the smaller dwellings is very profitable, as the range is used during a long season if not during the entire year. By encouraging lighting also by gas, the sale of gas per consumer is greatly increased without any additional investment on service or meter account.

The supply of light to the smaller stores and saloons away from the main part of the town can generally be handled to better advantage by the gas department also, and an added reason for this may be found in the fact that, in many instances, the proprietors live in the same building or in apartments adjoining their places of business. Thus is offered an opportunity for combined lighting and fuel accounts, as in the smaller residences, with relatively high sales of gas per meter.

On the main streets of the town, the larger stores should be lighted by electricity, and all lighting of windows and signs, as well as display lighting covering long hours, should also be done by electricity. In the larger business places the lighting becomes more directly chargeable to advertising, and the money expended by the merchant for light is in the nature of an investment to bring him increased business by attracting customers from among the passers-by. This lighting is spread out over long hours, and is more valuable to the electric plant, as it widens out the peak of the load curve. All necessity for economy in lighting with this class of merchants is eliminated while, in the case of the small merchant, in a location removed from the center of the town, the opportunity for attracting business through display lighting is limited and, therefore, economy must be practiced.

In the larger residences, where the occupants are ready and willing to pay increased lighting bills for the convenience of having electricity, it is necessary in many cases to give both gas and electric service. In the average residence of larger size it is doubtful whether these two accounts will be as large as they should be, considering the duplicated investment in services and meters, for the reason that the accounts are liable to be idle through the house being closed for some portion of the year, although the increased consumption during the months when the accounts are active may bring the total for the year up to a point where they are profitable to the company. In all classes of service, the most profitable business to be obtained is that which requires no increase in investment, but which results in added business done with an old consumer. With this class of business it is the more important to pay special attention to increasing the sales of both gas and electricity by the introduction of added appliances on existing installations.

Electricity has so decided an advantage, as applied to the supply of power, both from the standpoint of the consumer and also from that of the company, as to warrant the electric department taking all power business. This is made so because the capacity of the electric plant must be such as to take care of the large peak during the lighting hours of the early evening, and this gives a large available capacity to be loaded up during the hours of the day when current may be sold at an extremely low rate and still return a good profit to the company.

In general, long hour lighting may be more profitably handled on the electric end. On account of the high fixed charges resulting from large plant investment, business carried for only a short time on the peak returns only a small margin of profit. Such business can be more readily taken care of, and with greater profit to the company, by the gas end,

There is an increasingly large field for the sale of gas through industrial appliances, and to be used for brazing, tempering, annealing, core and mold drying, vulcanizing, japanning and the like, and this is a field that should be worked thoroughly, as it offers an opportunity for a large increase in output during hours when there is naturally a comparatively low demand upon the main system.

New territory, into which it is proposed to carry extensions, must be carefully studied and care taken to supply the service that will bring the best revenue. In all but the very best residence sections of a town it is unwise to parallel existing gas mains with electric lines. Comparatively few electric consumers will be added, and it is unlikely that enough electric business can be obtained to carry the extra investment. It is better to push the sale of gas on both fuel and lighting accounts, and especially so where the houses are old and not piped or wired. People who are willing to occupy old houses are generally unwilling to spend the larger amount called for in lighting by electricity.

The field of street lighting is open to both gas and electricity. In most parts of this country the tendency seems to be to light the streets by electricity, although in many large cities gas lamps are used, except on the principal streets. This branch of the lighting business must always be handled by a combined company in a manner to suit the conditions of the community and to conform to popular sentiment. In the large, open spaces, and on the main business streets,

electricity will probably be the choice, while incandescent gas lamps will very likely be found desirable on many of the residence streets where these are thickly lined with shade trees.

A question that has been largely debated is whether the same representative should be allowed to solicit both gas and electric business. A principal objection to the same man seeking business for both departments is that it has a tendency to cause him to lose enthusiasm in his work and to adopt an attitude of indifference towards the prospective consumer and put him in a state of indecision as to the choice to be made. The man representing both departments is apt to become confused himself and not give due regard to the selection of the business that can be handled in the best interests of the company and still give the consumer complete satisfaction. This matter of selection can be the better handled directly by the management by having separate men working in each department under definite rules and in defined territories, the whole campaign being so planned as to obtain the result desired, which may be summed up as being *to sell the best service at a reasonable price and obtain for the company a fair margin of profit.*

(To be Continued.)

[Proceedings, Furnished by the Secretary.—Continued from Vol. XCIV., page 1260.]

SEVENTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

Held in Lafayette Inn, Clinton, Ia., May 24 and 25.

First Day—Morning Session.

The President now introduced Mr. Wm. E. Davis, of South Omaha, Neb., who read the following paper based on the thought

WHY THE GAS MAN SHOULD EDUCATE THE PUBLIC.

One of the teachings of physics is, that the condition of maximum efficiency in any organism or machine requires that no energy be exerted with useless results; that friction be reduced to a minimum; that the various parts be duly co-ordinated to each other.

An industrial organization must conform to similar conditions. Its various parts must co-operate to reduce waste and energy, lead it not only to cheap production but also to efficient distribution; not only must there be co-operation among its various parts but among the organization and its patrons as well. A spirit of perfect harmony should exist between a corporation and a community, that the best conditions may be brought about. To this end the gas company should educate the public. That this may be done efficiently, two things are neccessary. First, the policy of the corporation must be broad and liberal; second, the man at its head should be a man of education as well as one of business shrewdness. He must have a correct understanding of human nature, and be able to meet all its varied conditions; must realize that the lives of the workers and the welfare of the community must never be subordinated to mere financial conditions. True economic cheapening of production is to be found in the ability to fully utilize the resources of nature and to prevent waste.

Speaking of the necessity of the man who stands at the head of a great corporation being the man of education, let me quote what Henry Drummond has to say of the part environment plays in the education of an individual, and show how it may be made to apply to industrial organizations. Says Drummond:

"He who truly understands these influences, he who has decided how much to allow for each, he who can regulate new forces as they arise or adjust them to make the old, so directing them at one moment to make them co-operate, at another time to counteract each other, understands the rational and personal development."

This holds equally true of industrial combinations. They are not to be allowed to drift whither they will, but must be dominated by a social ideal that will lead them to care for the welfare of the greater number. In other words, the environment of the individual—the public—and of the organizations—the corporations—must be judiciously moulded in such a manner as to lead to the highest individual and collective benefits. It should be the ideal governing our company, and we should educate the public to a just appreciation of that ideal, that a better understanding on the part of both public and gas company may be had.

The public must be educated to the fact that they possess something of a fellowship in our company, that though they may not share in its dividends, they share in the cheapening of production and the comforts of modern civilization which the company places within their reach.

The public does not rightly understand the relationship that the company holds toward it, or which it should hold toward the company.

They must be taught to know that every penny they pay for gas does not go into the pockets of fat, sleek capitalists; but that a very large per cent. is used to make further improvements.

It takes money to carry gas mains to remote parts of the city, and it takes additional money to have these mains connected with private homes. The public want the conveniences which the use of gas will give, so they should understand that they must pay for them just the same as they do for other commodities and necessities of life. This is the logical sequence of the matter; it is fair and based on sound business principles. Too often, however, the public fail to appreciate the principles that govern supply and demand, hence the duty of the gas man to educate them. Inasmuch as they demand that the pressure of gas should be such-and-such, that the quality must be a certain per cent. pure, they should know that it costs us more to manufacture and deliver our products, in these times of high cost of living, therefore our charges for gas should be in proportion.

Claims are often made by the public that other cities are furnishing gas cheaper than in their home city. We must educate them to the fact that conditions differ in different parts of the country; that it costs less to build a house in cities near stone quarries and lumber sections than in those remote from same.

In the manufacture of gas, coal and oil are needed, and these cost more in cities farther removed from the mines and oil fields than in those situated near the source of supply. An understanding of this important matter of unequal distribution will do away with much friction between the companies and the public.

The public pay us for gas, for appliances, all gas equipment and service. Our success depends entirely upon the extent to which we are able to develop such exchange. Any means of influence that will bring about the desired end in the transaction, we should cherish and promote. I know of no other means as promising as a thorough and systematic campaign of educating the public in all the different aspects of our mutual relations.

Each branch of the gas industry should assume some grade, or responsible division, of the school to educate the public in all the uses of gas, as well as in all its phases as a commercial exchange. It is well to consider how we may be able to carry to success the different measures of exchange. Many of us find we cannot do as well as we know; that our pupils—the public—are not responsive to suggestions made by us; that we can teach the facts and principles, but cannot arouse their feeling of confidence, their desire to co-operate. This is too true; but the fault lies most often with ourselves. We forget the fact that the gas man and the public must meet on common ground; that there is neither education, nor training except that which comes from personal influence and personal contact. Much responsibility devolves upon the new business department, as it is the first in the homes of the people, and should take the initiative in promoting the cause, in educating the public in the use of gas and its different appliances. Not only this, but much responsibility rests upon this department to win the public's goodwill in dealing with it; to set up an ideal structure of good service as a means of education.

We should educate the public, also, that they have their part to perform in the exchange, that they cannot make demands without giving adequate returns on our company's investment. It is simply a commercial problem, and that justice be conserved there must be constantly kept in view, by both consumer and producer, the "value received" idea.

We must educate the public in the matter of honest dealing. Not every man who forms a unit of that aggregate body of individuals called the public is absolutely honest. Not a few that try to "sand" the gas meter, to get something for nothing from the gas company. At the same time, we should be scrupulously honest in our dealings with the people; should show a due regard for their rights and their wishes. Vanderbilt's, "The public be dammed," so often manifested by those paid to look after the affairs of a company, and that it is often the policy of the company itself; is something the gas company should not stand for. It should educate the public that it stands for no such rudeness, or lack of civility and politeness on the part of its employees.

Have you read the article about "McAdoo and the Subway," appearing in the March issue of "McClure's Magazine?" It shows how one man undertook to deal squarely and honestly with the public, how he took the public into his confidence, and how that public backed him up in his fight against corrupt influences and powers that sought to crush him. How he achieved what seemed the well nigh impossible; and how he made his compauy a tremendously dividend-paying company—all because it was broad—based upon public co_operation and public approval. It was a company with an ideal, and it proved how it could make that ideal a paying investment. Mr. McAdoo introduced the human element into the management of his great transit system. Here is what he says:

"Corporations, like most other things, are simply the reflection of the chief personality in control; emphatically, they have souls. Go over the lines of any public service utility to day, carefully observe the general details of its service and equipment, the manner of its employees and their attitude to the public, and you will get a fairly good reflection of the soul of its management."

We should educate the public to the fact that we stand ready to act upon any reasonable or practical suggestion; that we cordially invite complaints as to service; that our policy is one of publicity. Why should we? For no other reason than is contained in the moral set forth in the article above referred to, respecting a man who built a rapid transit system that has about it all the romance of an Arabian Night's tale, so wonderful is it in every detail; who made his company one of the strongest and best dividend-paying companies of New York. Do not tell me it does not pay to educate the public; that politeness and a desire to please do not justify the trouble they entail.

Now for some of the practical details about which the public needs education. How about gas for cooking purposes? Do the public thoroughly understand this aspect of the question? Wouldn't an education along this line be dividends for our stockholders?

We can educate them how gas lessens the burdens and drudgery of the tired housewife; why it is the cheapest and best fuel, being cleaner and more sanitary. We must educate them as to the comfort of gas for heating purposes during early fall and spring weather. We must educate them how to handle it with the greatest safety; must show them there is no danger attached to its use, except through ignorance and carelessness.

Educate the public to read their own meter and "keep tab on it." This will do away with friction that occasionally "crops out" from the ignorance of the public on this matter. Moreover, it will do away with the feeling the public at times entertains that it is "dealing in the dark," and will create a disposition to "play fair" on the part of the public.

In conclusion, this matter of educating the public is of vital concern both to the gas company and to the public. Coupled with the McAdoo spirit, it will more than rebound to the interest of the gas company, and is something the gas man of to-day cannot disregard. For if we educate the public along these lines, we will have, instead of selfish greed, an attitude of antagonism, a feeling for the common good and a recognition of mutual dependence, things that will enable us to solve many of the modern problems which confront us in these modern times.

Discussion.

Mr. McLean - Having listened with interest to Mr. Davis's paper, I believe all who heard it would do well to be guided by the policy Mr. Davis favors. I think such is the spirit that at the present dominates the gas company, and I believe if it prevails the gas companies will continue to grow in favor with the public. Just such papers as Mr. Davis has given us are well calculated to satisfy the public of the aim of the gas men to please.

Mr. Addy—A point brought out in the last meeting of the Indiana Gas Association was that, the investment of the gas company is largely in proportion to its income. A man in mercantile business will have $100,000 invested, and perhaps do a million dollars of business every year; whereas, an instance was cited of a large gas company in Indiana that did a gross business of only $15 upon every $100 invested. The gross business done by any gas company is so small, in proportion to the actual investment in its plant, that it would be a physical impossibility to make the profit it is credited with making. The total gross income is not equal to the percentage of profit that many people believe a gas company can make. Another point over which the public is very much misled, is the cost of gas delivered to the burner, when compared to its cost in the holder. Many articles have been publicly published in which the statements were made that gas could be manufactured for a very small figure; but these are the costs at the holder, not including the general distribution expense, taxes, etc. Another thing the gas men sometimes overlook (although the expert accountants always have it in hand) is the loss on bonds. No company can sell bonds to equal the amount of its expenditures for additions to the property; and, in the second place, those bonds must be sold in almost every instance at a considerable discount, and the loss of this sale below par must be met out of the earnings of the company; so that no dividends can be paid until after this loss has been met. I think, too, the public are misled as to the savings by increased business. Any company which has increased its business, largely through reductions in price, ordered reductions very much greater per 1,000 than the reductions that could possibly be made per 1,000 feet in the cost. You all know cases where gas companies have reduced the price of gas, as the companies increased in size, from 25 to 40 cents per 1,000 feet, when the most they could do in reducing the cost of making and distributing was perhaps 10 cents. I think the gas companies as well as the public are sometimes misled as to the amount we can reduce the cost by increa sed business.

Mr. Maynard—From my point of view the gas company should educate the public for the same reason that the farmer should prepare the land and cultivate the crop. In the public field is where we get our living. Anybody can go out and sell some gas, but the territory must be cultivated in order to secure the very best returns. Explaining to the public the questions to which Mr. Davis refers is like cutting the thistles off the field, pulling out the weeds and rolling away the rocks. This enables you to develop the field better. Then when all of that is done you should take some of the McAdoo fertilizer—this suavity treatment—and you will have the best possible crop.

OFF-HAND COURTESIES.

The President—We will now listen to the excuses the President-elect of the Association may offer to us for being here to-day.

President-Elect Clabaugh - Mr. Chairman and Gentlemen: I wish to thank you all for the very great honor bestow ed upon me to-day, as well as for the many kindnesses you have shown me in the past. I have endeavored at all times to take an active part in these meetings, and have felt many times, although not particularly sensitive, that I had probably talked too much. You have all heard the story of the monkey and the parrot, and I sometimes felt I was the parrot; yet I feel, when a man is surrounded by friends and has everything on his mind, the least he can possibly do is to disclose those thoughts. I surely appreciate greatly the honor done in electing me President of our Association for the year 1912. I promise you to do my best to make that meeting equal to any that has gone before, although the precedents that have been here established by you are hard for any man to follow. We are all endeavoring to make improvements in our business, but we recognize that those develop slowly. The like applies here. The success of our meetings is due to the co-operation of you gentlemen, so the greatest appeal I can make to you is that you deal kindly with me, giving me your support. In return I promise to do everything on my part that it is possible to do. [Applause.]

The President—We will be glad to hear from Mr. Fair, First Vice-President.

Mr. Fair—Gentlemen, believe me, I appreciate beyond measure the honor you have done me. I will say nothing further at this time, except that I thank you very kindly indeed.

The President - Mr. Kennedy, I believe, is present.

Mr. Kennedy—I appreciate exceedingly the action of the convention, and will co-operate in every way with the other officers of the Association to have a rousing meeting next year.

The President—Possibly Mr. Kennedy might have something further to say in reference to going to Lincoln. We would be glad to hear from him at this time, as he was not present when we discussed that matter.

Mr. Kennedy—I am very sorry that I was not here. I have here letters of invitation from the Mayor of Lincoln and from the President of the Commercial Club:

May 22d, 1911.

Mr. G. I. Vincent, Secretary and Treasurer, Iowa District Gas Association, Des Moines, Ia.—My dear sir: I have learned that the Lincoln Gas and Electric Light Company has extended an invitation to the Iowa District Gas Association to hold its next annual meeting in 1912 at Lincoln, Neb. On behalf of the city of Lincoln, I take this opportunity of also extending to you an invitation to make Lincoln your next convention point. I can assure you of a cordial

welcome from all of our citizens. Hoping you will give us favorable consideration, I am, yours very cordially,

A. H. ARMSTRONG, Mayor.

May 22d, 1911.

Iowa District Gas Association, in Convention Assembled, Clinton, Ia.—Greetings: We have the honor to extend your Association, on behalf of the citizens, a cordial invitation to select Lincoln as the next meeting place for holding your annual meeting.

The Lincoln Commercial Club will provide an auditorium, which has a seating capacity of 2,500, or other adequate assembly halls for this occasion and without expense to your Association. And further will co-operate in other ways towards the success of the meeting.

Lincoln is distinctly a convention city, entertaining on an average of 100 large conventions, some of them national in scope, each year. The many lines of railway converging in Lincoln make it one of the easiest and most convenient cities to reach from all points. The Burlington, Rock Island, Union Pacific, Northwestern and Missouri Pacific Railways furnish adequate train service. At the present writing 80 passenger trains arrive and depart from the city daily, or in other words, we have a passenger train every 18 minutes.

Lincoln is ably represented at the meeting now in session, and these delegates are in position to give full details regarding our city, and its hotels and our ability for taking care of large meetings. You will find our citizens hospitable and ever ready to do their full share in entertaining their visitors.

Bespeaking for the success of your present meeting, and trusting we may have the opportunity of entertaining you in 1912, we are

Very respectfully, LINCOLN COMMERCIAL CLUB,
W. S. WHITTEN, Secretary.

They make some very bright promises for the entertainment of the convention. Lincoln is primarily a convention town, and I think we are fixed better than almost any other city in the district to entertain you. We will be glad ourselves to do all in our power to make things go on nicely. We have a plant which we would be very glad to open to your inspection, and we want the Association to decide on Lincoln as the next meeting place of the convention.

The President—Mr. Crawford has some announcements to make in regard to the entertainment.

Mr. Crawford here outlined the current entertainment, which was substantially as follows - the matters being in charge of Mr. Parker: At 10 A.M., session on the river in the steamer, and a picnic lunch to be served on that trip, the same being given by a committee of ladies representing the local churches. Friday, the itinerary was: Leave at 9:30 A.M. for Eagle Point Park, located about 4 miles to the north and overlooking the Mississippi, we think one of the most beautiful spots on the Mississippi river. The houses of the Wapsipinicon and Elks Clubs were open to all members. The local lighting plants were open for individual or group inspection at any time. [Applause.]

An adjournment was then ordered, to terminate at 2 P.M.

(To be Continued.)

PUBLICATIONS.

Fixtures.—A standard, universal line of lighting fixtures is fully illustrated in "Catalogue No. 10," F. W. Wakefield Bros. Company. The majority of the designs are for electric lamps, chiefly equipped with a type of glassware which is handled exclusively by large manufacturers of electric lamps.

Why Burn Coal?—Is another of those attractive post-cards from the Gas and Electric Company of Baltimore, Md. It surely puts a negative on such burning, and does so effectively. In fact, all the literature of this sort that emenates from the Press of the Baltimore Company under consideration is well worth while.

Safety News.—Under this title the Safety Car Heating and Lighting Company publish a monthly Bulletin, now in its first year. The June number contains 24 pages of matter, which will be prized by its readers not for its technical value alone, but also for its merit as a literary and artistic production. Apply for placing on its mailing list.

Reports, Corporation Commission of Oklahoma.—The Second and Third Annual Reports of this rather pugnacious Commission (they surely represent a pugnacious State, however) have appeared in book form, and it took 1,000 pages of paper to hold the data, statistics, etc., deemed worthy of mentioning. The headquarters of the Commission are naturally in Oklahoma City. Copies of the Reports can be obtained from the Secretary.

Welsbach Leaflets.—A number of leaflets have been issued by the Welsbach Company, describing a number of new additions to their well-known line, among which are the following: The No. 4 and No. 6 Reflex, filament ignition, ornamental posts and decorated glassware.

Items of Interest
FROM VARIOUS LOCALITIES.

MR. W. F. VAN TELLINGEN, whose thorough tuition in gas manufacture and distribution was gained in the Alkmaar (Holland) gas works, and recently in the plant at Atlantic City, N. J., and later on at Glassboro, N. J., has been appointed works' manager by the proprietors of the Iowa City (Ia.) works. He seems to have all the earmarks of a "Comer."

THE H. M. Byllesby Company confirms the story of its purchase of the Pueblo (Col.) Suburban Traction and Lighting Company and allied interests in Colorado, the properties having been taken over the 14th ult. The Pueblo and Suburban Traction and Lighting Company operates the street railway system of Pueblo, and supplies electricity to Pueblo and the Cripple Creek gold mining district, which includes in its field the busy settlements of Goldfield, Victor and Cripple Creek—the outlying towns of La Junta and Rockyford are served with electric currents by subsidiary corporations. A steam, electric power station, up to 4,125 kilowatts at Pueblo, and a hydraulic power plant of 1,600 kilowatts at Skaguay are operated. Arrangements are being made to increase the capacity of the steam station at Pueblo, and to extend the transmission lines to serve additional cities and towns. Additional hydro-electric developments are also contemplated. Mr. W. F. Raber is at present in charge of the Pueblo management for the Byllesby corporation.

THE Connecticut River Power Company, which secured ownership of the Gardner (Mass.) Electric Light Company some time ago, has recently acquired the plants and franchises of the Gardner Gas Light and Fuel Company.

THE Plymouth County (Mass.) Gas Light and Power Company, through the act of a majority of its Directors (Messrs. Farnsworth, Hale and Farnsworth, Jr.), has adopted the title of Old Colony Gas Company. Its business headquarters are, as before, in Haverhill, Mass.

MR. A. C. BEEBE, writing from Boston under date of June 26th, says: "I have failed to note in the JOURNAL any mention of the death of Mr. Hammon Reed, of Lexington, whose demise occurred the morning of May 2d, at his home on the estate of the Reed family, in the northern section of the town of Lexington, which estate has been in the possession of the Reed family since the founding of Lexington in 1685. He was one of the founders of the Lexington Gas Light Company and was prominent in the establishing of the Lexington Water Company. He was an active figure in every local enterprise, and had served Lexington in about every public capacity possible. He was born September 25, 1829, and was of the sixth generation of his family—his great-grandfather (Hammon Reed) participated in the battle of Lexington. His next of kin surviving are a son and a daughter, respectively named William W. and Sylvia B., or Mrs. Fred. K. Brown. He was much respected."

ANOTHER belated obituary action has to do with the special meeting of the Evansville (Ind.) Press Club, called to make suitable recording of the death of Mr. Robert D. Ferguson, Assistant General Manager of the Evansville (Ind.) Gas and Electric Light Company. The resolutions adopted were these:

Whereas, Death has removed from our midst a valuable member in the person of Robert D. Ferguson, whose sudden and untimely death was a shock to all the members of the Press Club, as well as to his large circle of friends throughout the city. Therefore, be it

Resolved, That in the death of Robert D. Ferguson this Club has lost a friend and comrade whose membership was highly cherished by all his companions. Cut down in the prime of his usefulness, when the future seemed radiant with hope, his passing away was a sad blow to those who knew him best and enjoyed his friendship. Able, manly, kind and courteous, his comradeship will be sadly missed by the members of the Evansville Press Club. Deceased easily made friends through his free and open nature, and the impression he left upon the people of Evansville during his short residence here will not be soon forgotten; for

"To live in hearte we leave behind
Is not to die."

Be it further

Resolved, That a copy of these resolutions be furnished the local press, and that another copy be sent to the brother of deceased, Dr. Edward Ferguson, Boston, Mass.

K. E. KNECHT, Secy. DE EARL MESHLATZ, Pres.

"DEAR JOURNAL: About a fortnight ago the New Jersey Board of Public Utility Commissioners approved a proposed issue of $63,000 five per cent. bonds, and $9,200 of capital stock by the New Jersey Gas Company, for the purpose of purchasing the stock and bonds of the Swedesboro Gas Company. The petitioners asked for a bond issue in the sum of $76,000, but the Board, after due investigation, decided that, under the governing conditions, $63,000 would be the maximum. The Board further approved an issue of $33,800 bonds and $5,500 capital stock by same petitioners for the plan of hooking-up the Glassboro station to the Swedesboro station. As the primary application asked for an issue of bonds amounting to $34,000, the Board may be looked upon in the light that some cherries are possible for gulping at one bite.—B. B. C."

THE vote in Albany, Ga., to determine whether or not a certain bond issue, totalling $100,000, should be made, the proceeds of such issue to go towards paying for certain municipal improvements, was almost unanimously "Aye." It is specified that $50,000 of the proceeds shall go to the erection of a municipal gas plant, the plan to include the necessary distributing mains.

LAST Monday a special meeting of the stockholders of the New Britain (Conn.) Gas Light Company, was held for the purpose of balloting on the acceptancy of the Act of the Connecticut General Assembly, approved April 24th last, giving the Company the right to increase its capital stock to a maximum of $1,000,000. The acceptance was voted unanimonsly.

"L. R. T.," writing to us from Boston, under date of the 27th ult., incloses this: "The Massachusetts Supreme Court has overruled the defendant's (F. E. Chandler) exceptions, in 2 suits brought against him by the Malden and Melrose Gas Light Company, to recover alleged secret profits made by him while President of the Company, and member of a committee appointed by the Company to purchase land for the enlargement of its works. Below Judge Doud had found for plaintiff Company, $48,700 for one parcel, for which it is alleged he had paid only $28,364, and $6,000 for another parcel, for which the original owners had received only $3,000. It was asserted that it had been represented to the Directors that the price for the land was $2,000 an acre, when it was in reality only $1,000. There was some conflicting evidence as to what price was actually paid the original land owners—that is, original as first party to this transaction - but the trial judge found the facts against defendant, and decreed his liability."

SECRETARY GREENFIELD and his associates, of the Sprague Meter Company, Bridgeport, Conn., have purchased a plot of land adjacent to its present site, Water street and South avenue, on which it will erect a substantial addition to its factory. The new addition was purchased from the Belknap estate.

THE American Meter Company (New York and Philadelphia) recently constructed, on special order, an experimental meter of the wet type, the vessel being built on somewhat different lines than those in common vogue. Owing to the novel construction of the drum of the meter, there is no fluctuation in sensitive hand recording these small divisions of a foot. Quite a feat, this, when it is known that the meter was built to correctly record quantities as low as one 10,000dth of a foot.

THE new purifying apparatus in the gas works at Pottstown (Pa.). of the Philadelphia Suburban Gas and Electric Company, will be constructed and erected by the Gas Machinery Co., of Cleveland, O.

THE great annual cotton carnival, which is a very attractive show to the residents of Fall River, Mass., and the thickly populated districts contiguous thereto, has been attracting more than usual attention this your. The main feature of the evenings is a lavish display of illumination, the major part of which is to be seen on Bank street and North Main street. While it would be incorrect to state that the electric current does not prominently figure in the illumination - for a very prominent part it takes—therein, nevertheless it is also a positive fact that gas contributes largely to the strength and harmony of the general effect. Notable in the show is the gas arrangement at the junction of Bank and North Main streets, at which point stand two 4-arm poles, and in front of the Armory and the Textile School, respectively, while a little further down are 5 double-arm poles carrying beautiful examples of 5-burner Humphrey arcs. The supports at the Textile School and the Armory carry each two 4-arm poles (as noted before), and the exteriors of these buildings were never before lighted as these were the last week in June—these burners are of the 3-mantle inverted lamps. The arrangement was intelligently planned under the direction of the Fall River Gas Works Company's Manager of New Business (Mr. F. M. Roberts) ably aided and abetted by Mr. Charles E. Blood, the Humphrey Company's hustling Eastern States' representative.

THE Lake Shore Gas Company has filed articles of incorporation with the Clerk of Erie County, N. Y., specifying the formation of the concern. The Directors are given as C. H. L. Ashby, Jno. S. Graham and J. V. Maloney, the two last named being residents of Buffalo.

THE Bluefield (W. Va.) Gas and Power Company's plant is to be on a large scale, the retort house and condensing apparatus being projected on a plan large enough to cover a plot 125 feet by 50 feet, and 2 stories high for ⅓ its dimension. Concrete foundations, brick walls and slate roof are provided for in the specifications.

THE proprietors of the Endicott-Union Gas Company, the works of which are to be constructed at a point just north of the Erie Railroad tracks in Endicott, have filed a petition with the Second District Public Service Commission, N. Y., for the issuing of $25,000 stock, and $50,000 bonds, the proceeds to be used in constructing the plant.

THE La Porte (Ind.) Gas Company's distribution systems will be reinforced by means of an 8 or 6 inch high pressure main, belting the district, complete.

THE gas supply of Springfield, Ore., was turned on initially the night of June 17th. The gas is sent on under high pressure, from the plant of the Oregon Power Company's plant in Eugene. The transmission distance is something less than 4 miles.

IT is now positively stated that local capitalists have been granted a franchise under which they will construct forthwith a gas plant in Corpus Christi, Tex. The grant is for a period of 25 years.

ASSEMBLYMAN PERRY, of the lower branch of the Wisconsin Legislature, has succeeded in killing the measure, known as the "Yockey" bill, which directed that the selling rate for gas in Milwaukee be reduced to 60 cents. Mr. Perry's speech on the matter was so convincingly fair that to its influence the radical change in sentiment of the legislators should be credited. Meanwhile, it might be noted that Mr. Sheldon J. Glass had performed quite a lot of missionary work that immensely contributed to outcome of the Honorable Mr. Perry's oratory.

AT the annual meeting of the Prescott (Wash.) Gas Lighting Company a dividend of 50 cents per share was declared and the following officers were elected: Directors, C. H. O'Neill, N. McSherry, H. S. Fender, J. B. Greenwall and H. B. Smith; President and Manager, C. H. O'Neill; Secretary-Treasurer, H. B. Smith.

THE piping system for the new plant at Pocatello, Idaho, is well underway, and the supplying of gas will be commenced not later than September 1st.

"B. V. R.," writing under date of the 24, June, says: "The JOURNAL has not told its readers who won the prize offered by the Pintsch Compressing Company for the best results obtained in its branch stations, for the best operating result recorded during the year. There are 61 of these, and the prize went to the Cities Service Company, the branch of the Denver Gas and Electric Company operating the Pintsch system in that district. The Denver Company took second prize last year." The JOURNAL did not mention the matter, simply because no one interested in the affairs thought it worth while to furnish the information.

THE United States Circuit Court of Appeals recently affirmed a decree of the Circuit Court, in case of Richard J. Burton, executor of the will of Parker C. Chandler, against the Bay State Gas Company, to recover for compensation under a contract by which the testator asked as counsel for the Company at a salary of $5,000 per year and an allowance of $3,000 for expenses. The Company pleaded that the receivership proceedings (July, 1903) terminated the contract, and with good show of reason, too.

"THE brightest spot in the city" is what the corner of Sycamore and Second streets (the site of the new office building for the Evansville, Ind., Gas Company) shall be the night that that structure will be completed—August 1st, 'tis said. At least this is what Manager A. C. Blinn, of the Evansville Gas Company, said, when giving some details respecting the structure to a reporter of the Evansville *News*. Mr. Blinn, as most people know who have had occasion to do business with him, rarely overstates a fact.

The Market for Gas Securities.

There was some improvement in the prices of city gas shares during the week, although the changes are not sufficiently marked to cause a bank account to become unduly inflated. Consolidated opened at 145½, bid, today (Friday). The figures furnished the Commission as to its operations during the past year are decidedly interesting.

Brooklyn Union is as before. Pay attention to these shares, for beyond a doubt there will be something of interest doing in them shortly. In out-of-town shares the feature is Washington gas, and many a Washington financier insists that the 500 mark will be reached therein before the summer is over. The Kansas City (Mo.) Gas and Electric Company has declared a quarterly dividend of 1¾ on its preferred.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

JULY 3

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$73,177,000	100	145½	146
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	103	105
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	115	116
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98½	100½
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	50	70
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	142	144
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106½	107
Yonkers	299,650	509	180	—
Out-of Town Companies.				
Bay State	50,000,000	50	⅝	⅛
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	509,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	50	60
Capital, Sacramento	500,000	50	—	85
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,662,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	106½	—
Mortgages, 6's	3,600,000		89	100
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	3,500,000	—	102	105
Detroit City Gas Co.	6,580,000	—	—	50
" Prior Lien 5's	5,619,000	1,000	97	100½
Detroit Gas Co., 5's	881,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	106	108½
Indianapolis	2,000,000	—	78	83
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	200,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis	10,000,000	100	108	108½
Preferred	2,500,006	100	94¾	102
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	108¾
Massachusetts Gas Companies, of Boston	25,000,000	100	93	93½
Preferred	25,000,000	100	95	95½
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	106½	106¾
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104½	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	100	102
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	108
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	97	98
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,800,000	200	445	450
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	361	—

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 18, 19, 20, 21, 1911. St. Louis, Mo. Officers: President, Donald McDonald, Louisville, Ky. Secretary, A. B. Beadle, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting, ——— Officers President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov., 1911. New York City. Officers: President, C. R. Huntley, Buffalo, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Guild of Gas Managers of New England.—Annual meeting, March, 1912. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, time, March, 1912, Chicago, Ills. Officers: President, C. B. Strohn, Elgin, Ills.; Secretary-Treasurer, F. E Newberry, Dixon, Ills.

Illuminating Engineering Society.—Annual meeting, Sept. 25, 26, 27, 1911, Chicago, Ills. Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S Millar, 29 W. 39th street, N. Y. City. Sections: New York, Secretary, Albert J. Marshall, 36 West 39th street. New England, Secretary, W. S. Farrow, 1240 Massachusetts avenue, Cambridge, Mass. Philadelphia, Secretary, S. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, F. H. Bernhard, Marquette Building.

Indiana Gas Association.—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, time, May, ——, 1912; Clinton, Ia. Officers: President, G. W. Clabaugh, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ——— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, Sept. 20, 21, 22, 1911; Detroit, Mich. Officers: President, A. P. Ewing, Detroit, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1912; St. Louis, Mo. Officers: President, F. E. Murray, Louisiana, Mo.; Secretary and Treasurer, N. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, October 23-28, 1911. Denver, Officers: President, C. N. Stannard, Denver; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May, 1912, Kansas City, Mo.; Officers: President, A. B. Macbeth, Independence, Kas. Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, third Wednesday in February, 1912, Boston. Officers: President, J. A. Coffin, Gloucester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn, Belmar, N. J.

Ohio Gas Association —President, John M. Garard, Columbus, O.; Secretary-Treasurer T. C. Jones, Delaware, O.

Pacific Coast Gas Association.—Annual meeting, Sept. 20, 21 and 22, 1911, Oakland, Cal. Officers: President, F. A. Leach, Jr., Oakland, Cal.; Vice President, W. Baurhyte, Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April, 1912, Williamsport, Pa. Officers President, C. W. Butterworth, Millon, Pa; Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, December, 1911; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 254 West 89th street, New York city.

Southern Gas Association.—Annual meeting, April, 1912, Jacksonville, Fla. Officers: President, H. B. Hoyt, Jacksonville, Fla.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. April 27, 28, 29, 1912; Houston, Tex. Officers: President, J. E. Carroll, Beaumont, Tex.; Secretary, D. G. Fisher, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 15 and 16, 1912, Milwaukee, Wis. Officers: President, H. M. Buck, Waukesha, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.